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ABSTRACT

One of seven career education programs chosen for nationwide dissemination by the Department of Health, Education, and Welfare's Joint Dissemination Review Panel (JDRP), Project CAP (Career Awareness Program) is being conducted for grades 1-8 in Greenland, Arkansas. For the years 1974-77, it received funding from both federal and local sources. It is specifically directed to increasing career awareness among elementary and junior high students from low income, rural areas. The curriculum was developed to show students that education is important and related to the world of work by pairing a specific academic skill with a selected occupation. Occupations and career education concepts are taught for fifteen occupational clusters as well as a self-awareness cluster. Two student learning packets were developed and are used at each grade level for each cluster. Parent and community involvement are stressed. Two evaluation tests, the Career Awareness Test and the Career Knowledge Test, were used to determine the project's effectiveness. Based on the results of these tests from 4,500 students evenly divided between participating and non-participating schools, it was concluded that Project CAP produced educationally significant results and contributed substantially toward fulfilling the career awareness needs of students. (The review process that this and the other six projects underwent prior to JDRP submission and approval is described in CE 020 214-215.) (EIG)

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PROJECT CAP

Boston Mountains Educational Cooperative
Greenland, Arkansas

A Submission to the
Joint Dissemination Review Panel

Jack A. Hamilton
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American Institutes for Research

30 April 1978

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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CE 020 222

PROGRAM AREA: Career Education

ACTIVITY TITLE, LOCATION: Boston Mountains Educational Cooperative for Federal Programs--Career Awareness Program (CAP)
Greenland, Arkansas

DEVELOPED BY: Project CAP staff, Boston Mountains Educational Cooperative

SOURCE AND LEVEL OF FUNDING: Funds for the first three years of the project (1974-1977) were provided by an ESEA Title III Grant and by local school district funds.

Grant Period	Level of Funding			
1974-75	Title III	71,062		
1975-76	Title III	52,885	Local	17,628
1976-77	Title III	32,624	Local	30,228
		$156,571		$47,856
	Total = $204,427			

YEARS OF ACTIVITY DEVELOPMENT: 1974-1977

BRIEF DESCRIPTION OF ACTIVITY

Goal

Project CAP students, grades 1-8, will be significantly more aware of careers than a similar student population not involved in the project.

Context and students served

The Boston Mountains Educational Cooperative is a consortium of eight school districts in a rural, mountainous area of northwest Arkansas. The cooperative pools the resources of several school districts to develop needed programs for area school children, programs which might not be available to individual school districts. Project CAP serves students from six of the consortium districts, five of which are located in Washington County and one of which is located in Madison County. The estimated population in the geographic area served is 16,000 persons with a school enrollment of 5,100. Ninety percent of the population is from rural farm families; the remaining 10% are considered rural non-farming families. Fifteen percent of all families in Washington County and 33.1% in Madison County are classified as having an income less than the poverty level. The school population is predominantly Caucasian.

Claims of effectiveness

The claims of effectiveness are that Project CAP staff-developed materials and related educational activities result in significantly increased career awareness among elementary and junior high students from low-income, rural areas.

Program description

CAP curriculum. The curriculum was developed to show students that school subjects are important and related to the world of work by pairing a specific academic skill with a selected occupation. For example, the skill of telling time on a clock is linked to the occupation of cosmetologist in a learning packet that describes the importance of keeping track of time so customers are not kept waiting. The curriculum has been revised to include a scope and sequence chart that presents occupations and career education concepts to be taught across the 15 USOE clusters

as well as a self-awareness cluster. For each grade level, two packets in each of the 15 occupational clusters plus two packets on self-awareness were developed for a total of 32 packets at each level. The occupations selected were varied in regard to entry-level requirements.

CAP materials. The materials include cluster units (with accompanying bulletin board materials), teacher directions, student packets, and testing instruments. Packet lists are distributed to participating teachers so they can request CAP packets to fit into their lesson plans. Teachers are encouraged to use packets at the rate of at least one per week.

CAP packets. Packets targeted for use in grades 1-6 were designed to be completed in 15 or more minutes of class time and to be infused into the ongoing curriculum. Packets for grades 7-8 were designed to occupy the same amount of class time, but they are occasionally used as separate units rather than being infused into the curriculum. The packets contain a career script that presents required tools, tasks, training, work conditions, and economics as well as the concept of work as a way of life. Emphasis is given to developing student awareness of personal preferences and to participation in decision making, with the opportunity to be creative in problem solving. The packet teaches an academic skill by demonstrating how a worker needs that skill and by providing practice activities. The posttest in each packet covers both career concepts and the academic skill. Bulletin board materials of printed letters and pictures, as well as a suggested layout, are provided. Teachers are encouraged to vary or add to the materials in any way they choose.

Project staff. The CAP staff consists of a project director, two curriculum coordinators, a deputy evaluator, a bookkeeper-secretary, and a machine operator. One consortium district (Greenland) provides office space for the project director and for the coordinators. Each coordinator is responsible for three schools. The coordinators go to the schools one day per week so that there are weekly meetings with teachers in each school. The coordinators meet with elementary and middle school teachers as well as principals and superintendents. The deputy evaluator visits each school once per week, while the project director makes periodic visits.

Staff development. During inservice days at the start of each school year, coordinators meet with teachers and principals to present samples of new curriculum units (packets) for the benefit of both new and returning teachers. During the year, training is conducted on an individualized basis during the weekly coordinator visits. Each teacher receives training concerning how to use and vary the instructional packets, while the coordinators receive suggestions for improving packets and ideas for developing new ones.

Weekly status report. A short report is completed each week by every participating teacher and principal, providing a communication channel with project staff as well as a double check for CAP administrative channels.

Parent-community involvement. A major concern of the project is parent-community involvement. Newsletters containing articles written by teachers and students who are participating in the program are sent home with each child. Teachers are given a Resource People List that indicates community members who will visit classes, or whom groups of students may visit, to discuss their occupations. Parents are invited to class to describe their careers. The project director and curriculum coordinators meet with the P.T.A. and school board groups to discuss the CAP program.

Costs

The 1974-77 budget for this project was $204,427. The six participating districts paid $47,856 of that amount. The average cost per student per year was $22.56. Costs for salaries included the project director, two curriculum

coordinators, an evaluator, a bookeeper-secretary, and a machine operator. The school districts provided office space for the director and coordinators as well as space for packet development work, printing, and packet storage. The following table presents costs for the three years of project development.

Table 1: Costs

	1974-75	1975-76	1976-77
Project Personnel	59,382	58,061	55,328
School Personnel Training	3,993	2,966	3,741
Equipment, Materials, and Consumables	7,687	9,486	3,783
	$71,062	$70,513	$62,852

The estimated costs of replicating the Project CAP program in an adopting school are shown below:

Table 2: Replication Costs

ITEM	COST
Set of 32 consumable packets	$1.00 per student*
Teacher's manual for each grade level	$2.00 per manual*
Consultant fee (optional)	$200.00 (2 days of a Project CAP consultant, at $100 per day) plus travel expenses

*does not include shipping charges

EVIDENCE OF EFFECTIVENESS

Interpretability of Measures

Project CAP staff administered two data collection instruments, one project-developed and one developed by an independent test development organization.

The Career Awareness Test (CAT). The CAT is a staff-developed instrument comprised of 30 multiple choice items and designed to measure knowledge of selected occupations and the training/education required to enter them. The instrument has three different versions: one for grades 1-3, one for grades 4-6, and one for grades 7-8. It is designed for group administration and the questions are read orally by the examiner.

Validity of the CAT. Prior to the drafting of items for the CAT, a review of relevant literature and materials was conducted. The Encyclopedia of Careers and Vocational Guidance, the Occupational Outlook Handbook, materials from Ohio State University's Center for Vocational Education, from the Oklahoma State Department of Vocational Education, from Cobb County, Georgia, and selected commercially published materials were reviewed. Based on this review, Project CAP staff selected 15 occupations from each of 15 career clusters.* These occupations were selected on the basis of present and forecasted demand, and were representative of the full range of positions on the career ladder from entry level through professional level.

*Project CAP staff utilized the U.S. Office of Education's classification of occupations into 15 clusters.

Using the total of 225 occupations across the 15 career clusters as their reference group, Project CAP staff wrote a minimum of 10 test items for each of the 15 clusters. These 10 or more items for each of the 15 clusters were administered to a pilot class at each of the levels to find the most discriminating items. An item analysis was conducted on the results obtained from each of the pilot classes. The two items from each cluster that best discriminated students according to their knowledge of occupations were combined to form separate 30-item versions of the instrument for each of the three levels.

Reliability of the CAT. To determine the reliability of the three versions of the CAT, each version was administered to 100 students at the respective grade levels. Each version of the instrument was divided into two equal parts and the scores on one half were correlated with the scores on the other half by computing Pearson Product-Moment correlations (corrected by the Spearman-Brown Prophecy Formula). The following internal consistency reliability coefficients were obtained:

Level	r
Grades 1-3	.68
Grades 4-6	.77
Grades 7-8	.71

The Career Knowledge Test. Published by Evaluative Research Associates, Inc., St. Louis, Missouri, the Career Knowledge Test is designed for students in grades 1-3 and assesses their knowledge of the world of work. Project CAP staff selected the Career Knowledge Test because the items included in it test knowledge of occupations, which are representative of all 15 USOE career clusters. It is a 30-item picture instrument in which items test knowledge of the similarities and differences of various occupations and of their required tools. The reliability of the instrument is shown by a reported internal consistency reliability coefficient of .85.

The Orientation to Career Concepts/Worker Activities Scale. Also published by Evaluative Research Associates, the Orientation to Career Concepts instrument includes a series of scales designed to measure career awareness of students in grades 4-8. Project CAP staff selected the Worker Activities Scale because it measures knowledge of what different workers do in various occupations that are representative of the 15 USOE career clusters. It is a 20-item scale; items are written in a five-response, multiple choice format. The reliability of the scale is evidenced by a reported internal consistency reliability coefficient of .76.

Credibility of Evidence

Evaluation design. Project CAP staff used a posttest only, matched control group model to evaluate the effectiveness of the project activities. To serve as control schools for the schools in the Boston Mountains Cooperative that participated in the project, six schools outside the Coop having no formal career education programs were selected. These schools were matched with the project schools with respect to: (a) school population; (b) number of teachers; (c) expenditures per ADA; (d) average daily attendance; (e) average assessed valuation; (f) geographic location; (g) socioeconomic factors; (h) curriculum; and (i) other contextual variables.

Evidence of comparability of treatment and control schools.

- Population of treatment and control schools

Project Schools: Population

School	Grade 1	2	3	4	5	6	7	8	Total
Elkins	34	34	30	43	49	22	44	50	306
Farmington	54	41	56	49	51	53	59	58	421
Greenland	23	27	32	29	38	45	45	47	286
Prairie Grove	83	76	71	80	67	71	56	58	567
St. Paul	28	27	44	21	28	30	20	35	233
West Fork	65	63	56	54	70	77	67	88	540
TOTAL	292	268	289	276	303	298	291	336	2353

Control Schools: Population

School	Grade 1	2	3	4	5	6	7	8	Total
Charleston	47	53	41	53	42	51	[illegible]	71	420
Deer	29	18	23	27	26	23	23	25	194
Eureka Springs	32	38	38	43	30	28	36	34	279
Green Forest	48	58	51	54	68	72	78	66	495
Pea Ridge	53	37	37	34	56	43	51	42	353
Yellville	55	41	54	54	45	55	50	57	411
TOTAL	264	245	244	265	267	272	300	295	2152

- The average number of teachers at the six treatment schools was 33.3; the average number of teachers at the six control schools was 30.3.

- Expenditure/ADA of treatment and control schools

Treatment Schools	Expenditure Per ADA	Control Schools	Expenditure Per ADA
Elkins	$795	Charleston	$712
Farmington	723	Deer	764
Greenland	838	Eureka Springs	1,013
Prairie Grove	755	Green Forest	756
St. Paul	884	Pea Ridge	719
West Fork	697	Yellville	736

- Average assessed valuation, ADA, and expenditure/ADA

	Average Assessed Valuation	Average ADA	Average Expenditure Per ADA
6 Treatment Schools	$3,583,285	604	$782.00
6 Control Schools	$3,798,705	581	783.50

- The six treatment and six control schools are geographically located in the rural, mountainous area of northwest Arkansas.

- Socioeconomic factors: the occupations of parents from the treatment and control school districts include limited farming, poultry raising, cattle raising, truck and orchard crops, logging, light industry, and service jobs.
- The curriculum of all twelve schools appears comparable, e.g., 9 of the twelve schools use the same reading series.
- The student populations from all twelve schools appear to have comparable exposure to media outside the school. All areas have access to a weekly county paper and in a few of the locations a daily newspaper. All areas can receive at least one clear network TV channel and an educational channel.

Data collection procedures. Students in the treatment and control schools were administered the CAT, the Career Knowledge Test, and the Orientation to Career Concepts/Worker Activities Scale in late February and March 1977. The instruments were administered by Project CAP staff after they had received special training in administering them, including practice in reading the questions orally to refine their pronunciation, pacing, and manner of administration. Project staff scored all student responses to the instruments. The project evaluator was responsible for all data analyses.

Evidence of impact

Data analyses. Mean posttest differences between treatment and control schools by grade level were analyzed using the t-test for independent samples. Tables 1, 2, and 3 below present the means, standard deviations, t-values, and significance levels for treatment and control schools on the Career Awareness Test (CAT), the Career Knowledge Test, and the Orientation to Career Concepts/Worker Activities Scale. The results presented in these tables demonstrate that the treatment schools invariably out-performed the control schools by a wide margin on the posttests. On all three instruments, at every grade level, group differences were highly significant.

Table 3

Career Awareness Test (CAT)

Grade Level	N	Mean	SD	t-value
1: Treatment	292	12.4	2.7	19.79**
1: Control	264	8.3	2.2	
2: Treatment	268	17.3	4.3	13.44**
2: Control	245	12.9	3.1	
3: Treatment	289	19.0	3.9	12.28**
3: Control	244	15.0	3.6	
4: Treatment	276	14.8	3.4	6.05**
4: Control	265	13.0	3.1	
5: Treatment	303	16.9	3.9	8.16**
5: Control	267	14.4	3.2	
6: Treatment	298	17.1	3.8	6.64**
6: Control	272	15.1	3.3	
7: Treatment	291	15.6	4.3	6.64**
7: Control	300	13.4	3.9	
8: Treatment	3[illegible]	17.6	10.1	4.84**
8: Control	29[illegible]	14.6	3.8	

**significant at the .001 level

Table 4

Career Knowledge Test

Grade Level	N	Mean	SD	t-value
1: Treatment	292	20.9	4.0	12.38**
1: Control	264	16.5	4.5	
2: Treatment	268	20.5	4.3	4.88**
2: Control	245	18.6	4.3	
3: Treatment	289	22.4	3.8	4.89**
3: Control	244	20.8	3.6	

**significant at the .001 level

Table 5

Orientation to Career Concepts: Worker Activities Scale

Grade Level	N	Mean	SD	t-value
4: Treatment	276	9.6	3.0	5.84**
4: Control	265	8.1	2.9	
5: Treatment	303	10.5	3.0	5.31**
5: Control	267	9.2	2.9	
6: Treatment	298	11.4	3.1	7.30**
6: Control	272	9.4	3.3	
7: Treatment	291	12.8	3.3	2.80*
7: Control	300	12.1	2.8	
8: Treatment	337	13.5	5.7	2.80*
8: Control	295	12.5	3.1	

**significant at the .001 level
*significant at the .005 level

Evidence that the effects are educationally meaningful

The evaluation plan used, the data collected and the resulting analyses provide reasonably convincing evidence that Project CAP produced educationally significant results. The treatment and control schools were equivalent on such variables as school population, school staff per student, district expenditure per ADA, average daily attendance, average assessed valuation, geographic location, socioeconomic factors, curriculum, and exposure to information outside the school. The use of comparable control schools appears to rule out the possibility of explaining the results in terms of other variables such as maturation effects, practice effects, and outside-school experiences. In addition, all mean differences between treatment and control schools exceeded one-third of a standard deviation; in fact, for grades 1-3 the treatment mean scores exceeded the control mean scores by more

than one standard deviation on the Career Awareness Test. The large sample that included grades 1-8 and the very high level of statistical significance attained across all grades indicate that the Project CAP goal of significantly increasing students' awareness of careers was achieved.

Evidence of generalizability to other populations

The high degree of stringency with which the evaluation was implemented and the exceptionally strong results provide reasonable assurance that the program is making substantial progress toward meeting the career awareness needs of local students. Those school districts with similar rural populations comprised predominantly of Caucasian students may consider adapting the Project CAP program to their local settings, knowing that the program has been demonstrated to be effective in its original locale.